

Charting Contemporary Interactions with the Carpinteria Tar Pits Park

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In this brief statistical overview of tourists thoughts on the Carpinteria Tar Pits, I explore the relationship between the characteristics of the Carpinteria Tar Pits Park as recorded by visitors from February 2011 to December 2017 in their Trip Advisor reviews of the site (IV) and the 1-5 star rating indicated by those visitors (DV).

The characteristics that recurred with frequency and centrality in the visitors’ written reviews of the site included: interesting, neat, hard to find, run-ins with security, natural beauty of the area, historical significance of the site, that the tar was gross, that it was impressive, and that visitors should beware of the sticky goop. These codes emerged out of content analysis, and a full code book of the reviews may be found in the document “CTP tarpitsreg.xlsx”.

We feel that looking at Trip Advisor reviews is a good way to get a sense of what visitors feel they would like to communicate about the site to other potential visitors. While certainly most users of the Tar Pits Park do not likely go on Trip Advisor before visiting the site, as it is frequented in large part by locals, the status of a Trip Advisor review in users’ contemporary interaction with the site is nontrivial, given that the Trip Advisor site is the second listed site when a Google search of the Carpinteria Tar Pits is conducted. To learn more about how characterizations of the site is related to star ratings on Trip Advisor, I have created a model described by the equation:

$$Y_i = \text{Beta-hat}_1 + \text{Beta-hat}_2 X_i + e_i$$

Here, Y_i is the dependent variable of the star rating indicated on the Trip Advisor review, Beta-hat_1 is the estimated y-intercept of the function, Beta-hat_2 is the estimated slope of the regression line, X_i is the independent variable of the particular characteristics of the Tar Pits Park communicated by the visitors in their reviews, and e_i is the stochastic error term, or the residual difference between the expected value and the actual value of the dependent variable.

I conducted bivariate OLS regression on these variables, running nine models in total for each particular characteristic. Tables 1.1, 1.2, and 1.3 summarize the results of these bivariate regressions.

Table 1.1: Trip Advisor Star Rating of Carpinteria Tar Pits Park by Characteristics Noted by Visitors: Positive, Statistically Significant Relationships

	Model: $Y_i = \text{Beta-hat}_1 + \text{Beta-hat}_2 X_i + e_i$	
	Interesting	Neat
Coefficient	.9722** (2.75) ^a	1.1483** (3.358)
Constant	3.4167	3.5789
N	30	30
Degrees of Freedom	28	28
Multiple R ²	.2127	.2871
Adjusted R ²	.1846	.2616
Residual Standard Error	.9486	.9026

** p < .05, one-tailed test

^a Values in parentheses are t-values

Table 1.1 shows that there is a statistically significant, positive relationship between a reviewer’s characterization of the tar pits as “interesting” and/or “neat” and the star rating afforded the site. Characterizations of “interesting” explain 21.27% of the variance in star rating, while characterizations

of “neat” explain 28.71% of the variance. At the same time, the residual standard errors of .9486 and .9026 respectively suggest that while these relationships are moderately strong and statistically significant, and can even explain a good portion of the variance in responses on the dependent variable, these characterizations are not necessarily helpful predictors of how visitors will rate the park. An almost one-star variance may be understood as a qualitative difference in a visitor’s enjoyment of the park.

Table 1.2: Trip Advisor Star Rating of Carpinteria Tar Pits Park by Characteristics Noted by Visitors: Negative, Statistically Significant Relationships

	Model: $Y_i = \text{Beta-hat}_1 + \text{Beta-hat}_2X_i + e_i$		
	Hard to Find	Security	Unimpressive
Coefficient	-1.2698** (-3.609) ^a	-1.8519** (-3.376)	-1.4907** (-4.078)
Constant	4.3810	4.1852	4.3478
N	30	30	30
Degrees of Freedom	28	28	28
Multiple R ²	.3175	.2894	.3727
Adjusted R ²	.2931	.264	.3503
Residual Standard Error	.8832	.9012	.8467

** p < .05, one-tailed test

^a Values in parentheses are t-values

Table 1.2 shows that there is a statistically significant, negative relationship between a reviewer’s mention of the sites as hard to find or unimpressive, as well reporting of run-ins with security, and the star rating afforded the site. Characterization of the sites as hard to find explain 31.75% of the variance in star rating, while characterization as unimpressive explains a whopping 37.27% of variance, and reporting run-ins with security explain 28.94% of the variance. At the same time, and as before the residual standard errors of .8832 and .9012 respectively suggest that while these relationships are very moderately strong and statistically significant, and can even explain a good portion of the variance in responses on the dependent variable, these characterizations are not necessarily helpful predictors of how visitors will rate the park.

Table 1.3: Trip Advisor Star Rating of Carpinteria Tar Pits Park by Characteristics Noted by Visitors: Non-Statistically Significant Relationships

	Model: $Y_i = \text{Beta-hat}_1 + \text{Beta-hat}_2X_i + e_i$				
	Natural Beauty	Warning of Tar	Gross	Impressive	History
Coefficient	.4167 (1.067) ^a	.5556 (-1.446)	-.2885 (-.505)	1.1111 (1.804)	.5769 (1.023)
Constant	3.75	3.7778	4.0385	3.8889	3.9231
N	30	30	30	30	30
Degrees of Freedom	28	28	28	28	28
Multiple R ²	.03906	.06944	.009014	.1042	.03606
Adjusted R ²	.004743	.03621	-.02638	.07217	.00163
Residual Standard Error	1.048	1.031	1.064	1.012	1.05

^a Values in parentheses are t-values

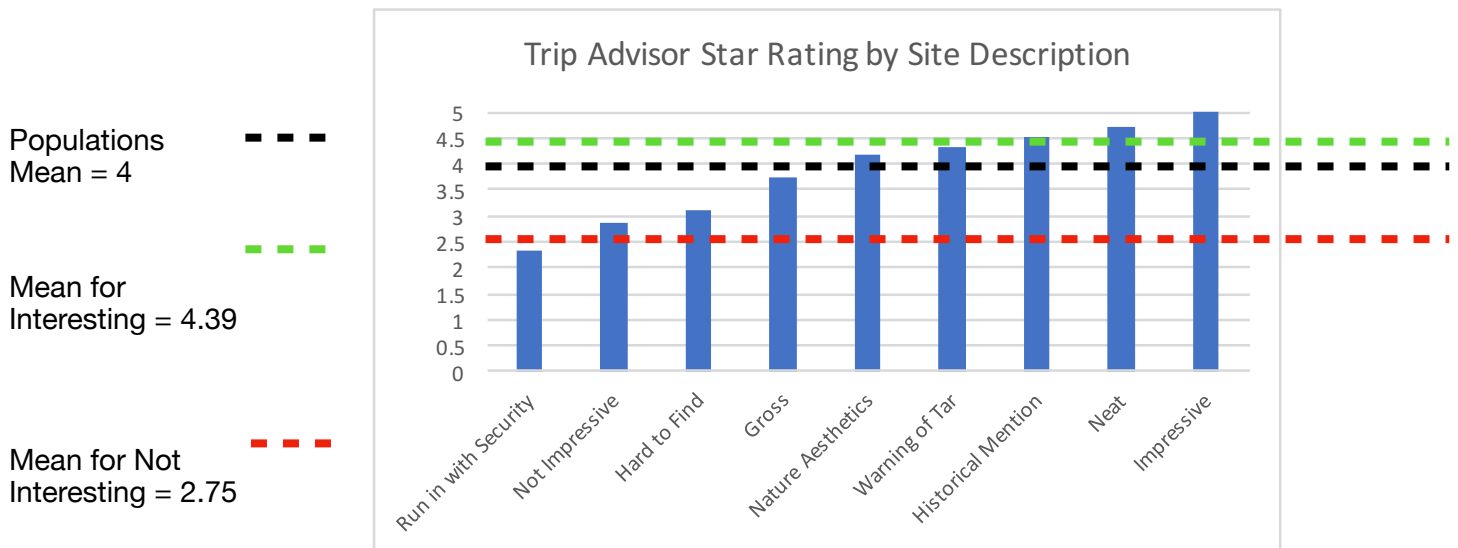
Table 1.3 shows that there is no statistically significant relationship between a reviewer’s mention of the park as having great value in natural aesthetics, their warnings of tar, their characterization of the pits as gross or impressive, or their appreciation for the site’s history. In all of these cases, reviewers’ remarks in regards to these features did not bear an important relationship to the rating they gave the park on Trip Advisor, nor did those remarks explain much of the variance in star ratings.

Looking forward to the ways that these data may be used by more advanced statisticians, several statements can be made about the data thus far. First, it is interesting that the work that has gone into making the park aesthetically appealing and emphasizing its natural beauty is really not what swayed reviewers to give high marks to the park. Similarly, reference to the rich history of the site appears to have had little impact. Nor did reviewers' thinking of the pits as remarkable translate necessarily into better reviews. Instead, what really elicited appreciation of this site from tourists was that the pits themselves were *interesting* and *neat*. Fascination, rather than awe, drove people's higher star ratings. On the other side, what kept people from giving high marks was not the various inconveniences associated with scrounging around tar pits, but the human-crafted boundaries: the security, and the confusing directions to the site. Of course, feelings that the tar pits were just boring had an important impact on star ratings and explained quite a bit of variance. Perhaps, this researcher hazards a guess, they'd just gotten their hopes up. Is this, they wonder, another human-made problem?

What might these results suggest about how we can encourage thoughtful interactions between humans and the more-than-human world? In a Deweyan sense, it might suggest that informational plaques don't count as much as people's ability to get down and dirty with the gunk of our world, to go poking and prodding and discovering. Next, it should perhaps make us reconsider the efficacy of landmarking when it is halted at the boundary of private industry. By permitting Chevron to slice the park with an off-limits parking lot and a security team, it kept some visitors away, and certainly made the experience less welcoming. These results could fuel a push to reclaim the space that Chevron now occupies, perhaps repurposing it as a lot for visitors who wish to interact with the pits *outside* frameworks of extraction.

Understanding that our data have a small n , I have created a supplemental data visualization (Graph 1.1) of the group mean star rating of each characteristic. While not all of these relationships are statistically significant, they show the average star rating of the reviews by each characteristic in relation to the overall mean. Here, and perhaps unsurprisingly, natural beauty, historical value, "neat"-ness, and impressiveness of the site all had higher than average group means. Shockingly, however, warnings of tar also had a higher than average group mean! Those who said the pits were hard to find, rife with security, gross, and positively unimpressive had group means lower than the average.

In addition to the population mean line on this graph, I have calculated averages for all those reviews that generally characterized the site as "interesting" versus "uninteresting". I derived these hierarchical codes from the first set of codes explicated at the beginning of this paper.



Source: Trip Advisor, Recorded February 2011 to December 2017, Accessed November 2018.